CLAIMS

What is claimed is:

1. A method of treating a condition amenable to treatment by promoting angiogenesis, said method comprising administering to a subject in need thereof an amount of a Nicotine, nicotinic acid analogs, or polymeric forms thereof, effective for promoting angiogenesis in said subject.

2. The method of claim 1, wherein said condition amenable to treatment by promoting angiogenesis is selected from the group consisting of: occlusive vascular disease, coronary disease, erectile dysfunction, myocardial infarction, ischemia, stroke, peripheral artery vascular disorders, and wounds.

3. The method of claim 1, wherein the Nicotine, nicotinic acid analogs is conjugated to a member selected from the group consisting of: polyvinyl alcohol, acrylic acid ethylene co-polymer, polyethyleneglycol (PEG), and polylactic acid.

4. A method of administering Claims 1 in combinations with Pro-angiogenesis factors such as fibroblast growth factor (FGF2), vascular endothelial growth factor (VEGF, and other pro-angiogenesis factors known in the art

5. A method of administering Claims 1 in combinations with vasodilators such as Nitric oxide donors, adenosine analogs, phosphodiaesterase inhibitors, apomorphine, and other vasodilators known in the art.

6. Compositions in Claims 1-4, to be used topically or systemically in impotence or erectable dysfunction. This would be of value in enhancing the effects of other standard therapies such as PDE 5 inhibitors including: Viagra. Viagra, Levitra, Cialis, other vasodilators or pro-angiogenesis agents such as VEGF, FGF2, and others.

7. Compositions in claims 1 provide methods for treating vascular occlusive diseases including venous and arterial disorders ranging from venous thromboembolic disorders (deep vein thrombosis, Sickle Cell diseases, and pulmonary embolism), and arterial thromboembolic disorders (coronary artery diseases, cerebrovascular disorders, and peripheral artery diseases).

8. The method of claim 1, wherein the mode of administration of Nicotine, nicotinic acid analogs or polymeric forms thereof, is parenteral, oral, rectal, topical, or combinations thereof.

9. The method of claim 4, wherein said parenteral administration is subcutaneous, intraperitoneal, intramuscular, intravenous, or combinations thereof.

10. The method of claim 1, wherein the Nicotine, nicotinic acid analogs, or polymeric forms thereof is encapsulated or incorporated in a microparticle, liposome, or polymer.

11. The method of claim 10, wherein the liposome or microparticle is administered intravenously.

12. The method of claim 10, wherein the liposome or microparticle is lodged in capillary beds surrounding ischemic tissue.

13. The method of claim 1, wherein the Nicotine, nicotinic acid analogs, or polymeric forms thereof is administered via catheter.

14. The method of claim 11, wherein the Nicotine, nicotinic acid analogs, or polymeric forms thereof is present in a polymeric system applied to the inside of a blood vessel via said catheter.

15. The method of claim 1, wherein the Nicotine, nicotinic acid analogs, or polymeric forms thereof is co-administered with one or more compounds selected from the group consisting of: a growth factor, a vasodilator, an anti-coagulant, and combinations thereof.

16. The method of claim 15, wherein said anticoagulant is heparin, heparin derivatives, anti-factor Xa, anti-thrombin, aspirin, clopidgrel, or combinations thereof.

17. The method of claim 15, wherein the Nicotine, nicotinic acid analogs, or polymeric forms thereof is administered as a bolus injection prior to or post-administering said growth factor, vasodilator, anti-coagulant, or combinations thereof.

18. A method for promoting angiogenesis along or around a medical device, said method comprising coating the device with a Nicotine, nicotinic acid analogs, or polymeric forms thereof, prior to inserting the device into a patient.

19. The method of claim 18, wherein said coating step further comprises coating the device with a growth factor, a vasodilator, an anti-coagulant, or combinations thereof.

20. The method of claim 18, wherein said medical device is a stent, a catheter, a cannula, or an electrode.

21. Nicotine, nicotinic acid analogs, or polymeric forms based on this invention provides methods for treating vascular occlusive diseases including venous and arterial disorders including **sickle cell diseases**, and erectile dysfunction.

22. The angiogenic agent of claim 21, wherein said polymer is polyvinyl alcohol, acrylic acid ethylene co-polymer, polyethyleneglycol (PEG), polylactic acid, or agarose.

23. The angiogenic agent of claim 21, wherein said conjugation is via a covalent or non-covalent bond.

24. The angiogenic agent of claim 23, wherein said covalent bond is an ester linkage or an anhydride linkage.

25. A pharmaceutical formulation comprising the angiogenic agent of claim 29 in a pharmaceutically acceptable carrier.

26. The pharmaceutical formulation of claim 25, further comprising one or more pharmaceutically acceptable excipients.

27. The pharmaceutical formulation of claim 25, wherein said agent is encapsulated or incorporated in a microparticle, liposome, or polymer.

28. The pharmaceutical formulation of claim 25, wherein the liposome or microparticle has a size less than 200 nm.

29. The pharmaceutical formulation of claim 25, wherein said formulation has a parenteral, oral, rectal, or topical mode of administration, or combinations thereof.

30. The pharmaceutical formulation of claim 25, wherein said formulation is co-administered to a subject in need thereof with one or more compounds selected from the group consisting of: a growth factor, a vasodilator, an anti-coagulant, and combinations thereof.